

Water Dynamics in Plant Production, 2nd Edition

Multiple Choice Questions

Chapter 8 – The Plant as a Link between Soil and Atmosphere: an Overview

1. Net radiation, R_N , at the soil surface is dissipated in **(a)** heating the air, **(b)** heating the soil, **(c)** evaporating water and **(d)** used in photosynthesis.
 - (i) Which of these (a, b, c or d) contributes to actual soil evaporation or evapotranspiration, at another location?
 - (ii) When actual evapotranspiration at a site exceeds the potential value because of the advection of energy, it is known as:
 - (a)** the clothesline effect
 - (b)** the oasis effect
 - (c)** the albedo effect
 - (d)** the van Bavel effect
2. Potential evapotranspiration is greater than potential evaporation because:
 - (a)** the evaporative surface of a plant stand is distributed over different heights above a given area
 - (b)** evaporation takes place more easily from a leaf surface than a soil surface
 - (c)** evapotranspiration includes evaporation and transpiration
 - (d)** all of the above
3. Which of the following factors are important in determining transpiration rate? (There may be more than one correct answer.)
 - (a)** soil water potential
 - (b)** soil hydraulic conductivity
 - (c)** net radiation
 - (d)** none of the above
4. From the statements below, select the unique characteristics associated with the resistance to water movement from the substomatal cavity to the outside of a leaf. (There may be more than one correct answer.)
 - (a)** It is particularly large.
 - (b)** It includes a variable resistance.
 - (c)** It is the only resistance to water vapour in the soil–plant–atmosphere continuum.
 - (d)** It comprises two resistances in parallel.
5. The equations developed by Penman and van Bavel for estimating potential evapotranspiration are known as combination equations because:
 - (a)** They combine information from the incoming solar radiation and its redistribution into long-wave radiation.
 - (b)** They ‘lock in’ evaporation and transpiration terms.
 - (c)** They combine thermodynamic and aerodynamic equations to overcome the need to measure the temperature of the evaporating surface.